REMARKS

This Application has been carefully reviewed in light of the Office Action mailed December 27, 2007. At the time of the Office Action, Claims 1-24 were pending in this Application. Claims 1-24 were rejected.

Rejections under 35 U.S.C. §103

Claims 1-2, 10-11, 14-15, and 21-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,245,109 issued to David Mendes et al. ("Mendes") in view of U.S. Patent 3,756,081 issued to Robert Eric Young ("Young"). Claims 3 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mendes in view of Young in view of U.S. Patent 4,618,822 issued to Per K. Hansen ("Hansen"). Claims 4-6, 13, and 17-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mendes in view of Young and further in view of U.S. Patent 4,556,886 issued to Wataru Shimizu et al. ("Shimizu"). Claims 7-9 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mendes in view of Young and further in view of U.S. Patent 4,127,110 issued to Lee O. Bullara ("Bullara"). Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Mendes in view of Young and further in view of U.S. Patent 3,628,381 issued to Martin L. Aronow et al. ("Aronow").

Applicants respectfully traverse and submit the cited art combinations, even if proper, which Applicants do not concede, does not render the claimed embodiment of the invention obvious.

Claims 1, 14, and 23 (the independent claims) have been amended to more clearly recite distinguishing features of the invention. Notably, these claims have been amended to recite the overcoupled feature of the sensors. Each sensor pair has a coil and a rod that is fixed relative to the coil. As is further recited, the overcoupling of two sensors results in a peak-splitting of their frequency response. The distance between the peaks is related to their mutual inductance, which changes with their separation distance.

Neither Mendes nor Young teaches or suggests the use of overcoupling between sensor pairs. Neither teaches that overcoupling results in peak splitting. Thus, neither can teach that the distance between peaks conveys useful information.

In the Office Action (page 4), the Examiner states that Young teaches a mixer to detect a shift in peak frequencies. It is true that Young teaches the use of a mixer to compare the frequency outputs of oscillator circuits. In Young, the oscillator circuits have coil-wire elements, and Young teaches that a pair of oscillator circuits can be used differentially. However, in Young, each coil has a "displacement wire" that moves relative to the coil. The frequency shift of Young is a result of movement of the wires relative to their respective coils.

Young does not teach or suggest mutual inductance between two coil-wire pairs in which the wires are stationary relative to the coils. In fact, Young teaches away from the present invention. None of the embodiments of Young would work if the wires (19, 9, or 10) did not move relative to the coils.

Mendes also teaches away from using sensor pairs to form an overcoupled circuit. Mendes teaches the use of relative motion between elements 34 and 36. Applicants do not agree with the Examiner's reliance on Mendes (col. 8 lines 62-77 through col. 9, lines 1-7) to support the Examiner's statement that Mendes teaches that a coil that does not move relative to a rod. Elements 34 and 36 are not a "pair of sensors" as stated by the Examiner. To the contrary, they form a single coil-magnet pair that move relative to each other.

Thus, the combination of Mendes and Young would not operate in accordance with the presently claimed invention.

For the above reasons, Claims 1, 14, and 23 are not obvious and are allowable. The remaining claims are dependent claims, and are also allowable.

CONCLUSION

Applicants have made an earnest effort to place this case in condition for allowance in light of the amendments and remarks set forth above. Applicants respectfully request reconsideration of all pending claims as amended.

Applicants enclose a Petition for Three Month Extension of Time and authorize the Commissioner to charge the $525.00 Extension fee to Deposit Account No. 50-2148 of Baker Botts L.L.P. Applicants believe there are no additional fees due at this time, however, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicants' attorney at 512.322.2634.

Respectfully submitted,
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Date: May 27, 2008

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